# MEME II: An Environment for Managing Meaning*

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The Metathesaurus Enhancement and Maintenance Environment (*MEME*) is used by the National Library of Medicine (NLM) to maintain, enhance and produce the Unified Medical Language System (UMLS) Metathesaurus. By early 1996, the current version, *MEME I*, will have helped to produce five annual versions of the Metathesaurus: Meta-1.2, Meta-1.3, Meta-1.4, the 1995 Metathesaurus, and the 1996 Metathesaurus. *MEME II* will be used to produce the 1997 Metathesaurus, beginning in early 1996.


**Figure 1 - MEME II data model.**

Lexical Technology, Inc. (LTI) and the NLM are designing and implementing MEME II. MEME II will be different than MEME-I in two critical respects: it will have a data model that supports "undoing" certain actions and it will support "concurrent activities."

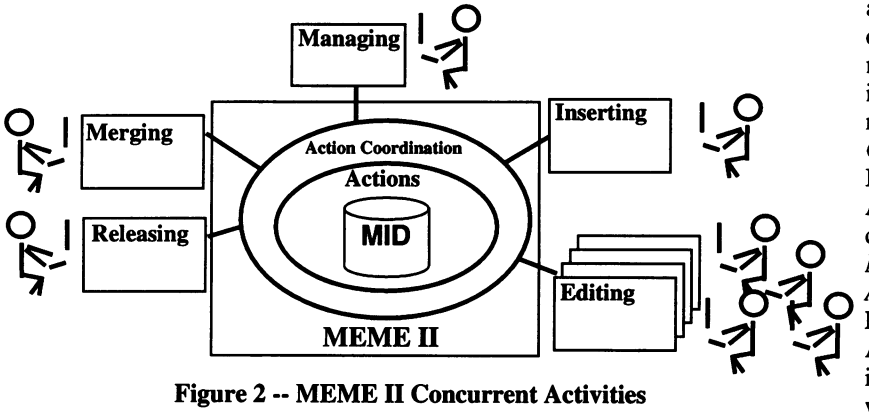


**Figure 2 -- MEME II Concurrent Activities**

Undoing: **Figure 1**, shows that MEME II *Actions* - commands that change meaning in the Metathesaurus - are represented as data.[1] Among other things, this allows (human) editors, or applications, to view the state of a Metathesaurus entry before it was last changed, or before all changes made to it since the last "checkpoint." The most important practical impact of this is that MEME II will almost always support a single level of "undo".

Concurrent Activities: An assumption implicit in **Figure 1**, namely that all units of meaning are represented homogeneously and can manipulated by a fixed repertoire of actions, permits the benefits illustrated in **Figure 2**. In MEME I, each of the activities illustrated in **Figure 2** required exclusive control of the database. If editors were working, new sources of terms could not be inserted into the MID (Metathesaurus Information Database); conversely if new terms were being inserted, editors could not do their work. A lesson learned from MEME I was that high availability of all MEME functions is important to sustain productivity. Thus, a goal of MEME II is that all the activities pictured can proceed concurrently, and this requires efficient coordination of operations at every level.

The MEME II data model displayed in **Figure 1** is implemented at the *Atomic Action* level displayed in **Figure 3**. These actions are the only ones that modify the information represented in the *Core Tables* level. In turn, Atomic Actions are combined to form *Molecular Actions*. Molecular Actions modify information at what can be thought of as the "concept" level. *Applications* invoke Molecular Actions to achieve some objective, e.g., to carry out an editor command or to complete the batch insertion of a new terminology. Finally, *Activities* are ongoing processes that produce deliverables, e.g., some quantity of edited entries, some number of sources inserted and merged, a version of the Metathesaurus, etc.

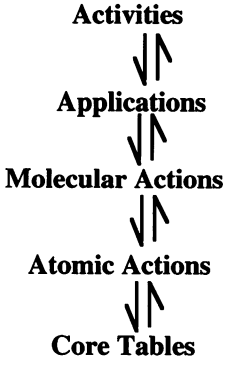


**Figure 3 - MEME II Layers**

In summary, MEME I required the strict serialization of the many activities necessary to manage meaning; MEME II is our first attempt to coordinate these activities so that they may be undertaken concurrently.

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References

1. Tuttle, MS, et al. Merging Terminologies. *MEDINFO95*, RA Greenes, et al., editors, IMIA 1995, 162-166.